"EpyNext Therapeutics aim is to contribute to the global fight against antibiotic resistance by developing a platform for the production of innovative monoclonal antibodies intended to prevent or to treat multidrug-resistant infections. Our antibodies target difficult-to-produce integral membrane proteins which are key factors for the virulence of various pathogens. Our technology is based on the reconstitution of the targeted membrane antigen into a proteoliposome using a cell-free expression system. This proteoliposome, which expose all the native epitopes of the target, is used to generate an animal immune library. After screening of the library by phage display, the selection of the best antibody candidates is mainly driven using the most advanced AI-technology for antibody discovery and checked experimentally. This original approach allows us to develop, in the simplest and most efficient way possible, therapeutic or prophylactic antibodies with very high affinity and specificity for their target. Their sequences, very close to those of a human antibody, simplify the humanization process while improving their efficacy and safety profile for human use..

Leveraging our technological platform and development approach, our first patented product targets the multi-resistant bacterium *Pseudomonas aeruginosa (Pa)*. *Pa* is an opportunistic bacterium, the second cause of nosocomial infections and pneumonia in hospitals, which are mainly acquired in intensive care units. Our anti-*Pa* antibody, EPY-001, targets the outer membrane porin OprF, a highly immunogenic, abundant and well-conserved integral membrane protein able to induce the production of neutralizing antibodies in mice immunized with OprF proteoliposomes.

Our first results demonstrated that our anti-OprF antibodies are able to recognize the rare open-conformation of OprF both under its monomeric and trimeric form. Moreover, the epitope recognized has been associated in the literature to the virulence of *Pa*.

Based on their affinity for this epitope, two anti-*Pa* antibody candidates have been selected and their efficacy is currently being tested in a mouse model of acute infection by *Pa*.

Other antibodies against another multi-resistant pathogens will quickly feed our "pipeline".